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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Oleg V. Kozyuk

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BENESCH, FRIEDLANDER, COPLAN & ARONOFF LLP

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EXAMINER

RAMDHANIE, BOBBY

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/760,606	Applicant(s) KOZYUK, OLEG V.	
	Examiner BOBBY RAMDHANIE	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12, 14, 17 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12, 14, 17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed See Remarks 02/22/2008, have been fully considered but they are not persuasive. The Following reasons are why:
2. Applicant argues that Ficklinger et al does not disclose a flow through channel comprising an inlet, an outlet, and a cavitation chamber. Examiner respectfully disagrees. Ficklinger et al does disclose a flow through channel with an inlet, and outlet, and a cavitation chamber. It is known in the art that a cavitation chamber may be defined as a long cylindrical tube (See Moseley et al; US3894562, Figure 1 Item 28). Applicant's claims have been read in light of the Specification provided however, the claim interpretation for which the applicant seeks patentable coverage on; can not be limited to just the Applicant's Specification.
3. Further, Ficklinger et al does disclose the cavitation chamber is situated within the flow-through channel. Figure 2 of Ficklinger et al discloses a flow-through channel. Liquid flows through Item 38 through Item 28. Item 36 is a movable needle valve which allows the pressure of the fluid to be varied upon entering the cavitation chamber. Cavitation of the liquid occurs when the pressure of the liquid entering the inlet opening reaches a pre-determined amount (See Moseley et al; Abstract).
4. In regards to the restriction wall, Ficklinger et al discloses Item 43 which may define a restriction wall. The intended use has been given a relative amount of patentable weight in determining the structural limitations of the device.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 12, 17, & 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Ficklinger et al (US3849074).

7. Applicant's claims are toward both a device and method.

Regarding Claims 12, 17, & 18, Ficklinger et al discloses a device for creating hydrodynamic cavitation in fluids comprising: A). A flow-through channel configured to permit a hydrodynamic liquid to flow therethrough (See Figure 2 Item 16), the flow-through channel having an inlet (See Figure 2 Item 32) and an outlet (See Figure 2 Item 28); a cavitation chamber situated within the flow-through channel between the inlet and the outlet (See Figure 2 area where two fluid streams meet in Item 16), the cavitation chamber defined by at least one wall and an exit orifice wherein (See Figure 2 Item 16, walls define both sides of Item 16 and Item 28; exit orifice): the wall includes a first orifice configured to permit the introduction of a first liquid stream into the chamber (See Figure 2 Item 32) and an opposing second orifice configured to permit the introduction of a second liquid stream into the chamber (See Figure 2 Item 30), wherein the first and second orifices are generally aligned with each other and the first orifice has a diameter sufficiently smaller than the second orifice to permit penetration of the first liquid stream into the second liquid stream, and the exit orifice is in communication with the outlet

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(See Figure 2 Item 28); a restriction wall in physical communication with the wall and the flow-through channel to prevent the hydrodynamic liquid from exiting the flow-through channel before entering the first and second orifices (See Figure 2 Item 43).

Additional Disclosures Included: Claim 17: A method of creating hydrodynamic cavitation in fluids, the method comprising the steps of: A). Passing a hydrodynamic liquid through a flow-through channel having at least one wall (See Figure 2 Item 32); introducing a first liquid stream through a first orifice in the wall to create a first liquid jet (See Figure 2 Item 32); introducing a second liquid stream through a second opposing orifice in the wall to create a second liquid jet that is larger in diameter than the first liquid jet interacts with (See Figure 2 Item 32) and penetrates each other; and creating a high shear intensity vortex contact layer when the first liquid jet interacts with and penetrates the second liquid jet thereby creating hydrodynamic cavitation (See Figure 2, Item 32 and 36 the movable needle valve and inlet opening would inherently allow for this method step to occur); Claim 18: The method of claim 17, further comprising the step of creating and collapsing cavitation caverns and bubbles in the high shear intensity vortex contact layer (See Figure 2. This is inherent to the method being claimed because the creation and collapsing of caverns and bubbles are made and destroyed on a continual basis in the high intensity vortex contact layer).

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Claims 12, 14, 17, & 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Kahl (US5723518).

1. Applicant's claims are towards a device and method.

Regarding Claims 12, 14, 17, & 18, Kahl discloses a device for creating hydrodynamic cavitation in fluids comprising: A). A flow-through channel configured to permit a hydrodynamic liquid to flow therethrough (See Figure 1), the flow-through channel having an inlet and an outlet (See Figure 1 Item 6 and Item 5); a cavitation chamber situated within the flow-through channel between the inlet and the outlet, the cavitation chamber defined by at least one wall and an exit orifice wherein: the wall includes a first orifice configured to permit the introduction of a first liquid stream into the chamber and an opposing second orifice configured to permit the introduction of a second liquid stream into the chamber (See Figure 1 area where Item 4 is labeled) the first and second orifices are generally aligned with each other and the first orifice has a diameter sufficiently smaller than the second orifice to permit penetration of the first liquid stream into the second liquid stream (See Column 2 lines 46-58 & Column 4 lines 26-31) and the exit orifice is in communication with the outlet (See Figure 1); a restriction wall in physical communication with the wall and the flow-through channel to prevent the hydrodynamic liquid from exiting the flow-through channel before entering the first and second orifices (See Figure 1 Items 2 or 3).

Additional Disclosures Included: Claim 14: The device of claim 12, wherein the wall includes third and fourth_opposing orifices that are generally aligned with each other and have different diameters (See Figure 2 & Column 2 lines 46-58 & Column 4 lines 26-

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31); Claim 17: A method of creating hydrodynamic cavitation in fluids, the method comprising the steps of: A). Passing a hydrodynamic liquid through a flow-through channel having at least one wall (See Figure 2); B). Introducing a first liquid stream through a first orifice in the wall to create a first liquid jet; introducing a second liquid stream through a second opposing orifice in the wall to create a second liquid jet (See Figure 2 Item 4) that is larger in diameter than the first liquid jet interacts with (See Column 2 lines 46-58 & Column 4 lines 26-31); and C). Creating a high shear intensity vortex contact layer when the first liquid jet interacts with and penetrates the second liquid jet thereby creating hydrodynamic cavitation (See Figure 2, this is essential to the function of the cavitation chamber as shown by the arrows flowing through the wall labeled as 2 & 3); Claim 18: The method of claim 17, further comprising the step of creating and collapsing cavitation caverns and bubbles in the high shear intensity vortex contact layer (See Figure 2; this is inherent to the method being claimed because the creation and collapsing of caverns and bubbles are made and destroyed on a continual basis in the high intensity vortex contact layer).

Telephonic Inquiries

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BOBBY RAMDHANIE whose telephone number is (571)270-3240. The examiner can normally be reached on Mon-Fri 8-5 (Alt Fri off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bobby Ramdhanie, Ph.D./
Examiner, Art Unit 1797
/B. R./

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797